

A REVIEW OF THE GENUS WALSHIA CLEMENS
WITH DESCRIPTIONS OF NEW SPECIES
(LEPIDOPTERA: GELECHIOIDEA)

By RONALD W. HODGES¹

Walshia was proposed by Clemens as a monobasic genus for *W. amorphella* Clemens. Subsequently, Chambers described a second species, *miscecolorella*, which was later treated as a synonym of *amorphella* by Walsingham (1882, Trans. American Ent. Soc. 10: 197) and all subsequent authors. Study of the male and female genitalia of specimens of the genus showed that there are five species having similar wing pattern found north of Mexico. Also, *Perimedede particornella* is congeneric with *W. amorphella*.

Walshia Clemens

Type: *Walshia amorphella* Clemens, 1864. Monobasic.

Walshia Clemens, 1864, Proc. Ent. Soc. Philadelphia 2: 418.

Riley, 1869, Rep. Ins. Missouri 2: 132.

Clemens, in Stainton, 1872, Tineina of North America, 249.

Chambers, 1878, Bul. U. S. Geol. Geog. Surv. Terr. 4: 110.

Riley, 1886, Proc. Ent. Soc. Washington 1: 30.

Riley, in Smith, 1891, List of the Lepidoptera of Boreal America, 100.

Kearfott, in Smith, 1903, Check list of the Lepidoptera of Boreal America, 118.

Dyar, 1902 [1903], Bul. U. S. Natl. Mus. 52: 544.

Busck, 1903, Proc. Ent. Soc. Washington 5: 216.

Holland, 1903, The moth book, 430.

Walsingham and Durrant, 1909, Ent. Mo. Mag. 45: 156.

Walsingham, 1909, Biologia Centrali-Americana. Insecta. Lepidoptera-Heterocera 4: 14.

Busck, 1914, Proc. U. S. Natl. Mus. 47: 2.

Barnes and McDunnough, 1917, Check list of the Lepidoptera of Boreal America, 152.

Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem. 68: 324.

Forbes, in Leonard, 1928, Cornell Univ. Agric. Exp. Sta. Mem. 101: 552.

Fletcher, 1929, Mem. Dept. Agric. India, Ent. Ser. 11: 235.

McDunnough, 1939, Mem. Southern California Acad. Sci. 2: 64.

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Labial palpi upturned slightly beyond vertex, smooth-scaled, gradually tapering to apex. Antennae simple; pecten present or absent. Ocelli present. Head smooth-scaled. Tongue well developed, scaled. Forewings lanceolate with patches of raised scales; 12 veins; 7 and 8 stalked, 7 to costa. Hindwings narrowly lanceolate; 8 veins; 2 sometimes poorly developed; 7 to costa.

Male genitalia: Valvae symmetrical or asymmetrical, fused at base, with setae on inner and outer surfaces, abundant in cucullar area, and with a series of fractures setting off dorsal, cucullar, and saccular areas. Uncus present, simple. Gnathos absent. Tegumen heavily sclerotized at juncture with vinculum, moderately sclerotized dorsally. Vinculum heavily sclerotized, partially fused with valvae. Aedeagus heavily sclerotized, ankylosed. Vesica without cornuti.

Female genitalia: Genital plate lightly sclerotized. Ductus bursae slender, lightly sclerotized. Bursa copulatrix lightly sclerotized. Signum absent. A dorsal sclerotized band connecting apophyses anteriores.

KEY TO THE SPECIES OF WALSHIA BASED UPON
THE MALE GENITALIA

1. Valvae symmetrical 2
Valvae asymmetrical 5
2. Valvae sublinear (Fig. 7) *miscicolorella*
Valvae not linear, with well developed costal area (Fig. 6) . 3
3. Cucullar area sharply defined, constricted at base (Fig. 6) . 4
Cucullar area not well defined, no well marked lobes
(Fig. 9) *particornella*
4. Width of cucullar area two-thirds that of valva
(Fig. 6) *amorphella*
Width of cucullar area one-third that valva
(Fig. 11) *exemplata*
5. Cucullar area of right valva slightly smaller than that
of left valva (Fig. 10) *similis*
Cucullar area of right valva greatly reduced (Fig. 8) . *dispar*

KEY TO THE SPECIES OF WALSHIA BASED UPON
THE FEMALE GENITALIA

1. Ostium near posterior edge of genital plate
(Fig. 15) *particornella*
Ostium near or at anterior edge of genital plate (Fig. 12) . 2
2. Heavily sclerotized band anterior to ostium
(Fig. 14) *amorphella*

- Ostium not preceded by a sclerotized band 3
3. Ductus bursae sclerotized before ostium
 (Fig. 12) *miscocolorella*
 Ductus bursae not sclerotized immediately before ostium
 (Fig. 16) 4
4. Midventral gap in row of setae on ovipositor
 (Fig. 16) *similis*
 No gap, or a very small one, in row of setae on ovipositor
 (Fig. 13) *dispar*

Walshia amorphella Clemens
 (Figs. 3, 6, 14)

Walshia amorphella Clemens, 1864, Proc. Ent. Soc. Philadelphia
 2: 419.

Riley, 1869, Rep. Ins. Missouri 2: 132.

Clemens, in Stainton, 1872, Tineina of North America, 241.

Chambers, 1878, Bul. U. S. Geol. Geog. Surv. Terr. 4: 110.

Walsingham, 1882, Trans. Amer. Ent. Soc. 10: 197.

Riley, in Smith, 1891, List of the Lepidoptera of Boreal America,
 100.

Kearfott, in Smith, 1903, Check list of the Lepidoptera of Boreal
 America, 118.

Dyar, 1902 [1903], Bul. U. S. Natl. Mus. 52: 544.

Busck, 1903, Proc. Ent. Soc. Washington 5: 216.

Holland, 1903, The moth book, 430.

Walsingham and Durrant, 1909, Ent. Mo. Mag. 45: 156.

Walsingham, 1909, Biologia Centrali-Americana. Insecta. Lepi-
 doptera-Heterocera 4: 14.

Busck, 1914, Proc. U. S. Natl. Mus. 47: 2.

Barnes and McDunnough, 1917, Check list of the Lepidoptera of
 Boreal America, 152.

Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem. 68: 325.
partim.

Fletcher, 1929, Mem. Dept. Agric. India, Ent. Ser. 11: 235.

McDunnough, 1939, Mem. Southern California Acad. Sci. 2: 64.

Walshia amorphaeella, Chambers, 1878, Bul. U. S. Geol. Surv.
 Terr. 4: 166, misspelling.

Face and vertex dark brown; face sometimes with lighter scales.
 Maxillary palpi yellow-brown, apex darker. Labial palpi yellow-
 brown on inner surface of second segment; third segment darker
 brown; apex dark brown. Antennae with pecten present. Thorax
 dark brown. Forewings burnished brown on a buff background;

dark brown for one-third of distance from base to apex; a broad oblique brown-buff band at one third; outer half darker than streak but paler than basal area; a dark patch of raised-scales at one-fifth below costa, another at one-fourth between fold and dorsal margin; a large light patch of raised-scales at two-fifths from costa to fold; a small patch of raised-scales at one-half between fold and dorsal margin; six small dark patches of raised-scales, evenly distributed, from tornus to apex; four small dark patches of raised-scales from three-fourths to apex along costal margin; cilia fuscous, darker between apex and tornus; a faint gray line in cilia from apex to third patch of raised-scales. Hindwings dark fuscous, cilia slightly lighter. Abdomen dark brown dorsally, shining buff under some light conditions; pale buff ventrally. Legs dark brown on outer surface, shining buff on inner surface; light gray to white rings at middle and apices of tibiae; tarsal segments light gray apically.

Male genitalia: (Fig. 6) R.W.H. slide no. 423.

Female genitalia: (Fig. 14) R.W.H. slide no. 452.

Alar expanse: 8-15 mm.

Food plant: *W. amorphella* has been reared from stem galls of *Amorpha fruticosa* L., *Hydrangea* sp., and *Salix* sp. Most of the records are of rearings on *Amorpha*.

Type: Academy of Natural Sciences, Philadelphia. Lectotype: female, bearing the following labels: (1) Ill. (2) Paratype, *Walshia amorphella*, B. Clemens, 7492. (3) *Walshia amorphella*, Type: A. B. 1902, Clemens. (4) female Genitalia Slide 561 Ronald W. Hodges.

Type locality: Illinois.

Specimens examined. 23 ♂♂, 28 ♀♀. **Illinois**: Chicago, Henry, Morton Grove, Quincy, May 28-July 17. **Kansas**: Manhattan, Medora, April 22 and May 3, reared specimens. **Kentucky**: Gallatin Co, May 23. **Minnesota**: no locality, March 1 through May 27. **Missouri**: Kirkwood, April 20 through May 3. **Nebraska**: Seward, April 26 and 27. **Texas**: Denton, April 15.

Walshia miscecolorella (Chambers)
(Figs. 2, 7, 12)

Laverna miscecolorella Chambers, 1875, Can. Ent. 7: 51.

Chambers, 1877, Bul. U. S. Geol. Geog. Surv. Terr. 3: 144.

Chambers, 1878, Bul. U. S. Geol. Geog. Surv. Terr. 4: 152.

Walsingham, 1882, Trans. American Ent. Soc. 10: 197. as synonym of *L. amorphella*.

Busck, 1903, Proc. Ent. Soc. Washington 5: 216. as synonym of

L. amorphella.

Walshia miscecolorella Riley, in Smith, 1891, List of the Lepidoptera of Boreal America, 100. as synonym of *W. amorphella*.
Dyar, 1902 [1903], Bul. U.S. Natl. Mus. 52: 544. as synonym of *W. amorphella*.

Laverna miscecalonella, Chambers, 1875, Can. Ent. 7: 34. *lapsus calami*.

Walshia miscecalonella, Dyar, 1902 [1903], Bul. U. S. Natl. Mus. 52: 544. as synonym of *W. amorphella*.

Barnes and McDunnough, 1917, Check list of the Lepidoptera of Boreal America, 152. as synonym of *W. amorphella*.

McDunnough, 1939, Mem. Southern California Acad. Sci. 2: 64. as synonym of *W. amorphella*.

Walshia amorphella, Riley, 1886, Proc. Ent. Soc. Washington 1: 30. misidentification.

Antennae with pecten present. Color and pattern similar to that of *W. amorphella* except for forewings often appearing more contrasting: basal patch darker brown, outer area light buff. In some Californian specimens, dark areas, except for basal patch, reduced. Light rings on hind tibiae and tarsi usually white to light buff.

Male genitalia: (Fig. 7) R.W.H. slide no. 385.

Female genitalia: (Fig. 12) R.W.H. slide no. 458.

Alar expanse: 9-16 mm.

Food plant: *W. miscecolorella* has been reared from the stems of *Lupinus arboreus* Sims, *L. chamissionis* Esch., and *Lupinus* sp.; from the roots of *Astragalus* sp. and *Arachis* sp.; and from *Cirsium vulgare* (Savi).

Type: Museum of Comparative Zoology. Lectotype: male, bearing the following labels: (1) Chambers, Tex. (2) Type, 1370. (3) *Laverna miscecolorella* Cham. (4) male genitalia slide 29.X. 1957, J.F.G.C. No. 10653.

Type locality: Bosque Co., Texas.

Specimens examined: 301 ♂♂, 82 ♀♀. **Arizona:** Paradise; Redington; Williams; South Fork Little Colorado River, White Mts.; Huachuca Mts.; Ramsay Canyon, Huachuca Mts.; Washington Mts. near Nogales; Turkey Flat, Chiricahua Mts.; Upper Camp, Pinery Canyon, Chiricahua Mts.; Santa Catalina Mts.; Tonto Creek Camp Ground, Gila Co.; Madera Canyon, Santa Rita Mts. (May 24 through September 7). **California:** Argus Mts.; Berkeley; Beverley Terrace; Bishop; Bishop Creek; Bixby Canyon, Monterey Co.; Cajon Wash, San Bernadino Co.; Chula Vista; Claremont; Clarksburg; Colusa; El Segundo; Happy Camp, Siskiyou Co.; Independence; La

Puerta; Lassen National Park; Loma Linda; Los Angeles; Marin City; Mexican Well; Mill Valley, Marin Co.; Monachee Meadows, Tulare Co.; Richmond; San Diego; San Francisco; Santa Catalina Island; Shasta Retreat, Siskiyou Co.; Tujunga; Upper Santa Ana River, San Bernardino Co.; Yosemite Valley (March 20 through November 23). **Colorado:** Colorado Springs, Fort Garland, Pike National Forest, Sangre de Cristo Range at Alpine Lodge, Rock Creek Canyon, May 26 through August 22. **Florida:** Casadaga, De Land, Gainesville, Lakeland, Siesta Key, Winter Park, January 13 through July. **Illinois:** Putnam Co., August 5. **Indiana:** Hessville, July 5. **Iowa:** Sioux City, May 6. **Kansas:** Sherlock, February 11-19, reared. **Maryland:** Cabin John, Plummer's Island, July through August. **Montana:** Bigtimber, no date. **New Mexico:** Organ Mts. at Dripping Springs, Jemez Mts., Mesilla, White Mts. at South Fork Eagle Creek, April 23 through August 13. **North Carolina:** Maxton, Pollocksville, May 15 through September 30. **Oklahoma:** Stillwater, no date. **Oregon:** Forest Grove, Joseph, Waldport, June 7 through July 21. **South Dakota:** Elk Point, August. **Texas:** Bosque Co., no date. **Utah:** Eureka, July 9 through August 20. **Washington:** Bonneville, Pullman, Rochester, Seattle, Walla Walla, Yakima, May 25 through August 17. **Alberta:** Lethbridge, July 4-13. **British Columbia:** Kamloops, Shingle Creek, June 8 through August 5. **Manitoba:** Aweme, Winnipeg, June 13 through July 25. **Saskatchewan:** Indian Head, Saskatoon, July 13 through August 4.

***Walshia similis*, n. sp.**

(Figs. 4, 10, 13)

Labial palpi fuscous, no yellow shades. Antennae with pecten absent. Coloration and maculation of wings similar to *W. amorphella*, often appearing washed-out.

Male genitalia: (Fig. 10) R.W.H. slide no. 466. Valvae normally symmetrical, sometimes asymmetrical.

Female genitalia: (Fig. 13) R.W.H. slide no. 454.

Alar expanse: 8-12 mm.

Food plant: unknown.

Types: Holotype: male, Cherry Hill Recreation Area, Route 107, Oconee County, South Carolina, 2000 feet, August 20, 1958 (R. W. Hodges), [Cornell University Type No. 3647]. Paratypes: Cherry Hill Recreation Area, Route 107, Oconee County, South Carolina, 2000 feet, 8 ♀♀, August 17 through September 7, 1958 (R. W. Hodges); East River, Connecticut, 1 ♀, August 1910

(Chas. R. Ely); Putnam Co., Illinois, 2 ♀♀, June 24, 1956 and August 12, 1949 (M. O. Glenn); Martha's Vineyard, Massachusetts, 1 ♂, August 22, 1941 (F. M. Jones); Essex Co. Park, New Jersey, 2 ♂♂, July 30 and August 16 (W. D. Kearfott); New Lisbon, New Jersey, 2 ♀♀ (E. P. Darlington); Oakland, New Jersey, 6 ♂♂, 2 ♀♀, August 4-14, 1948 (C. P. Kimball); Ramsey, New Jersey, 1 ♂, 1 ♀, August 2, 1935; Highlands, Macon Co., North Carolina, 2 ♀♀, August 10 and 23, 1958 (R. W. Hodges); Leland, North Carolina, 2 ♀♀, September 1 and 3, 1946 (Otto Buchholz); Maxton, North Carolina, 5 ♂♂, 1 ♀, August 5 through September 30, 1943 and 1944 (A. B. Klots); Pollocksville, North Carolina, 1 ♂, September 15, 1931 (Bradley and Knorr); Clermont Co., Ohio, 1 ♂, August 19, 1920 (Annette F. Braun).

Other specimens examined: 8 ♂♂, 9 ♀♀. **Connecticut:** Putnam, August 29. **Illinois:** Putnam Co., June 24. **Michigan:** Livingston Co., July 29 through August 17. **New Jersey:** Oakland; Ramsey, July 17 through August 14. **New York:** Tuxedo; Woodlands, August 7-25. **North Carolina:** Maxton; Pollocksville, June 1 through September 15. **Pennsylvania:** New Brighton, July 13. **Virginia:** Lexington, September 11.

Paratypes have been deposited in the following collections: American Museum of Natural History; California Academy of Sciences; Cornell University; Los Angeles County Museum; Academy of Natural Sciences, Philadelphia; United States National Museum; A. F. Braun; M. O. Glenn; C. P. Kimball; A. B. Klots; and R. W. Hodges.

W. similis can be separated from *W. amorphella*, *W. miscecolorella*, and *W. exemplata* by the asymmetry of the valvae and by the sharp constriction at the base of the cucullar areas in the male genitalia. It can be separated from *W. dispar* by the degree of asymmetry: the valvae of *similis* are nearly equal in size, whereas the right valva of *dispar* is about two-thirds the size of the left valva.

Walshia dispar, n. sp.

Walshia amorphella

Forbes, 1923, Cornell Univ. Agric. Exp. Sta. Mem. 68: 325. misidentification, *partim*.

Forbes, in Leonard, 1928, Cornell Univ. Agric. Exp. Sta. Mem. 101: 552. misidentification, *partim*.

Labial palpi fuscous, no yellow shades. Antennae with pecten absent. Maculation of wings similar to *W. amorphella*.

Male genitalia: (Fig. 8) R.W.H. slide no. 464.

Female genitalia: (Fig. 16) R.W.H. slide no. 496.

Alar expanse: 10–13 mm.

Food plant: unknown.

Types: Holotype: male, Six Mile Creek, Ithaca, New York, July 17, 1957 (J. G. Franclemont), [Cornell University Type No. 3646]. Paratypes: Six Mile Creek, Ithaca, New York, 16 ♂♂, 6 ♀♀, June 20 through August 14 (J. G. Franclemont); East River, Connecticut, 1 ♂, August 17, 1909 (Chas. R. Ely); Essex Co. Park, New Jersey, 2 ♂♂, July 22 and 30 (W. D. Kearfott); Great Falls, Virginia, 1 ♂, July 31, 1919 (A. Busck); Hot Springs, Virginia, 1 ♀, August 11, 1916 (M. Hebard).

Other specimens examined: 4 ♂♂, 1 ♀. **New Jersey:** Essex Co., August 2. **New York:** Ithaca, July 18 through August 6. **Ontario:** Ottawa, July 26.

Paratypes have been deposited in the following collections: California Academy of Sciences; Cornell University; Los Angeles County Museum; Academy of Natural Sciences, Philadelphia; United States National Museum; J. G. Franclemont; and R. W. Hodges.

W. dispar can be separated from the other species of the genus by the extreme asymmetry of the male genitalia. The right cucullar area is reduced to one-third that of the left.

***Walshia exemplata*, n. sp.**

(Fig. 11)

Labial palpi fuscous. Antennae with pecten absent. Superficially this species is like *W. amorphella* in maculation.

Male genitalia: (Fig. 11) R.W.H. slide no. 460.

Female genitalia; no specimens available.

Alar expanse: 13 mm.

Type: Holotype: male, Plummer's Island, Maryland, July 1902 (A. Busck), [Los Angeles County Museum].

W. exemplata can be distinguished from *W. amorphella*, *W. miscecolorella*, *W. similis*, and *W. dispar* by having symmetrical valvae with well defined cucullar areas that are one third the width of the valvae.

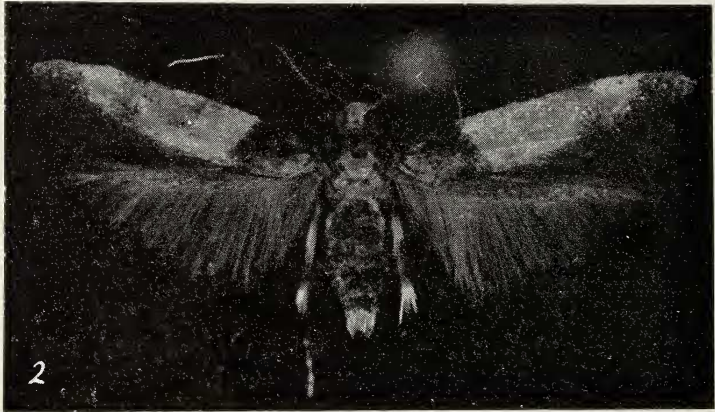
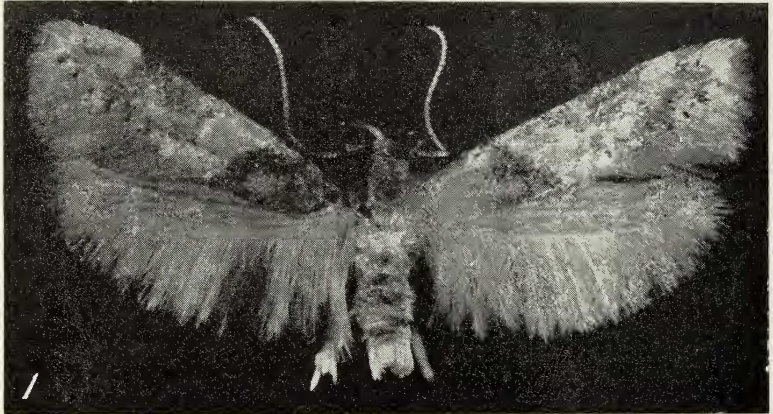
Walshia particornella (Busck), new combination.

(Figs. 5, 9, 15)

Perimede particornella Busck, 1919, Proc. Ent. Soc. Washington 11: 96.

Barnes and McDunnough, 1917, Check list of the Lepidoptera of Boreal America, 152.

McDunnough, 1939, Mem. Southern California Acad. Sci. 2: 64.

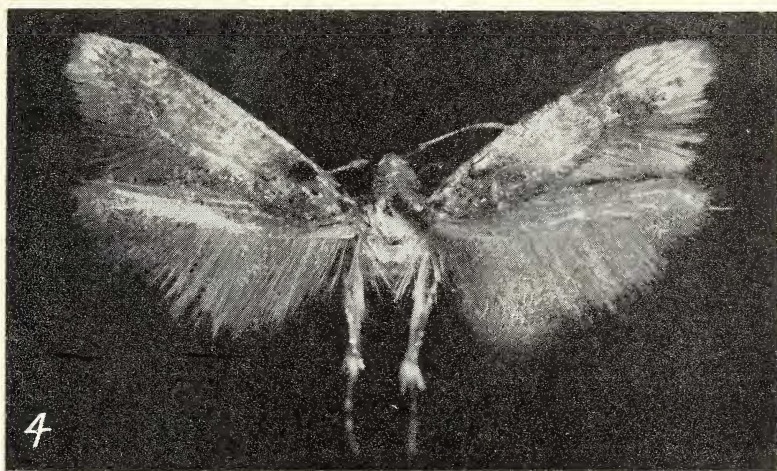


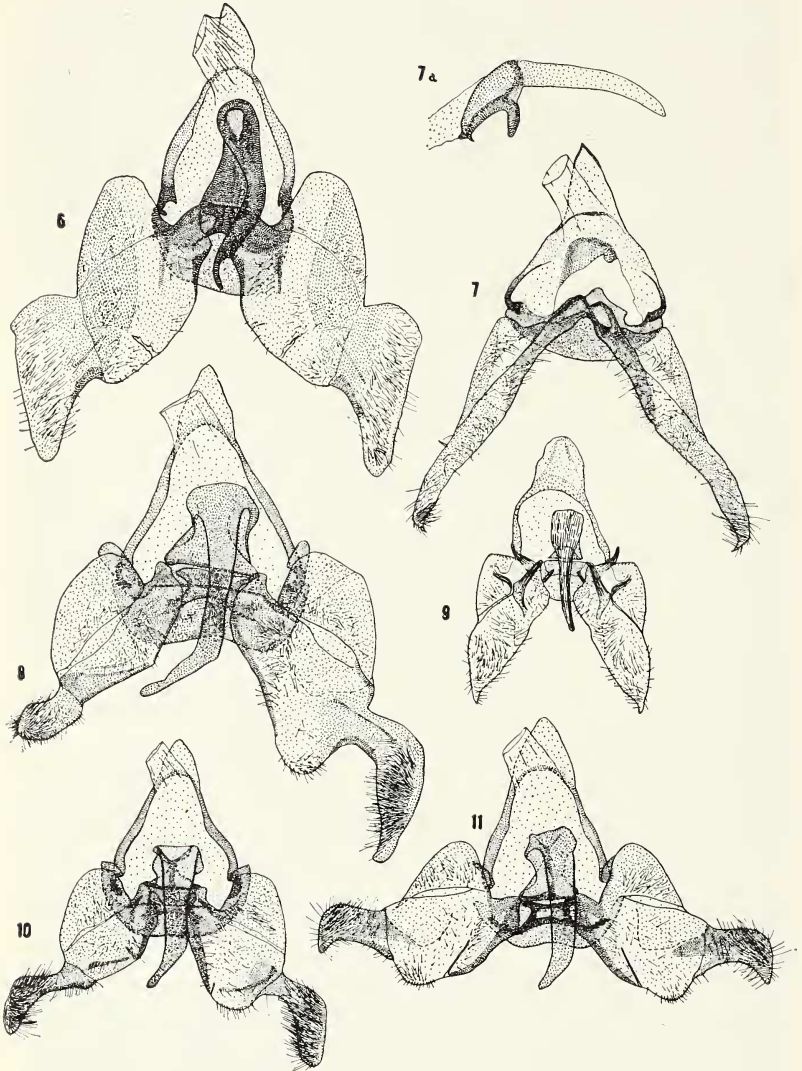
EXPLANATION OF PLATES I AND II

Fig. 1, *Walshia dispar*, n. sp., holotype, male, Six Mile Creek, Ithaca, New York. Fig. 2, *W. miscicolorella* (Cham.), male, Madera Canyon, Santa Rita Mountains, Arizona. Fig. 3, *W. amorphella* Clemens, female, Putnam Co., Illinois. Fig. 4, *W. similis*, n. sp., holotype, Oconee Co., South Carolina. Fig. 5, *W. particornella* (Busck), male, Putnam Co., Illinois.

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PLATE II





EXPLANATION OF PLATE III

Figs. 6–11, Ventral view of male genitalia of *Walshia*. Fig. 6, *W. amorphella*. Fig. 7, *W. miscecolorella* (Cham.). Fig. 8, *W. dispar*, n. sp. Fig. 9, *W. particornella* (Busck). Fig. 10, *W. similis*, n. sp. Fig. 11, *W. exemplata*, n. sp.

The male genitalia indicate that this species is not congeneric with *Perimede erransella* Chambers, the type of *Perimede*.

Male genitalia: (Fig. 9) R.W.H. slide no. 18. In Fig. 9 the basal part of the tegumen does not meet the vinculum; this is a result of the preparation.

Female genitalia: (Fig. 15) R.W.H. slide no. 500.

Alar expanse: 8–12 mm.

Type: United States National Museum.

Type locality: Plummer's Island, Maryland.

Specimens examined: 14 ♂♂, 2 ♀♀. **Illinois**: Putnam Co., June 4 through July 15. **Maryland**: Plummer's Island, July. **Texas**: Devers, June 21. **Virginia**: Alexandria, May 27.

The holotype and series of paratypes of *W. similis* from Highlands, North Carolina and Oconee Co., South Carolina were collected during the summer of 1958 when the author was assisting Dr. J. G. Franclemont. The collecting was done under the auspices of a grant from the Penrose Fund of the American Philosophical Society.

The outline maps are from the Goode Base Map Series published by the University of Chicago (Copyright by the University of Chicago.)

The author wishes to thank the following persons and institutions for furnishing the specimens which form the basis of this study: American Museum of Natural History; California Academy of Sciences; Canadian National Collection; Chicago Museum of Natural History; Cornell University; Illinois Natural History Survey; Los Angeles County Museum; Museum of Comparative Zoology; Philadelphia Academy of Sciences; United States National Museum; University of California at Berkeley; University of Michigan; Dr. Annette F. Braun; Dr. J. G. Franclemont; Mr. M. O. Glenn; Mr. C. P. Kimball; Dr. A. B. Klots; and Mr. J. A. Powell.

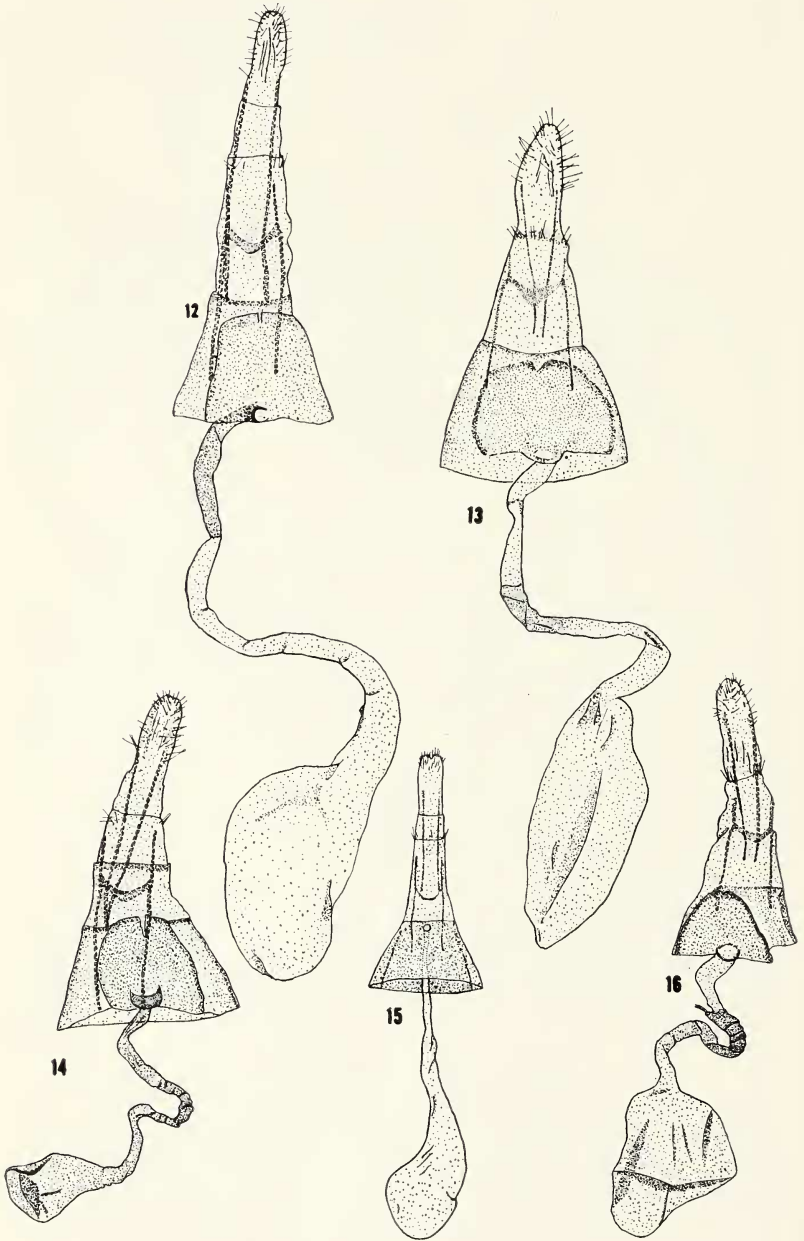
Grateful acknowledgment is made to the Grace H. Griswold Fund of the Department of Entomology of Cornell University for assuming the expense of engraving the plates.

EXPLANATION OF PLATE IV

Figs. 12–16, Ventral view of female genitalia of *Walshia*. Fig. 12, *W. miscecolorella* (Cham.). Fig. 13, *W. similis*, n. sp. Fig. 14, *W. amorphella* Clemens. Fig. 15, *W. particornella* (Busck). Fig. 16, *W. dispar*, n. sp.

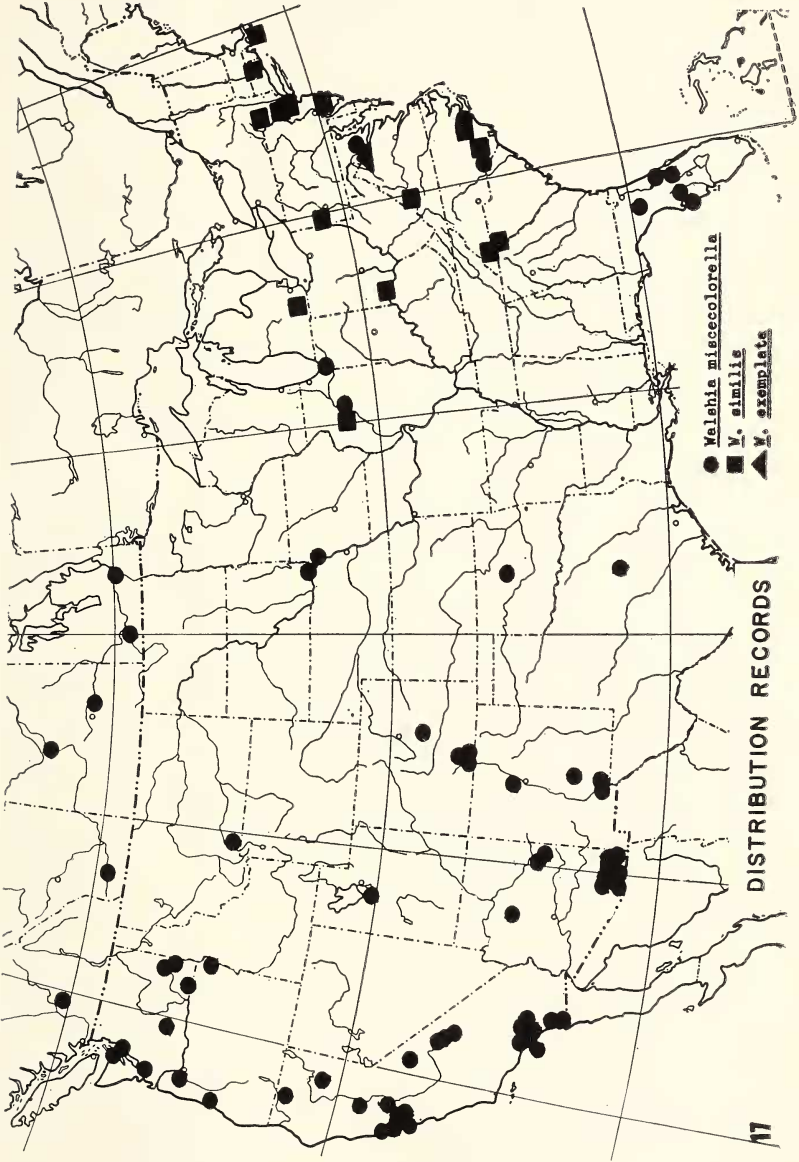
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PLATE IV



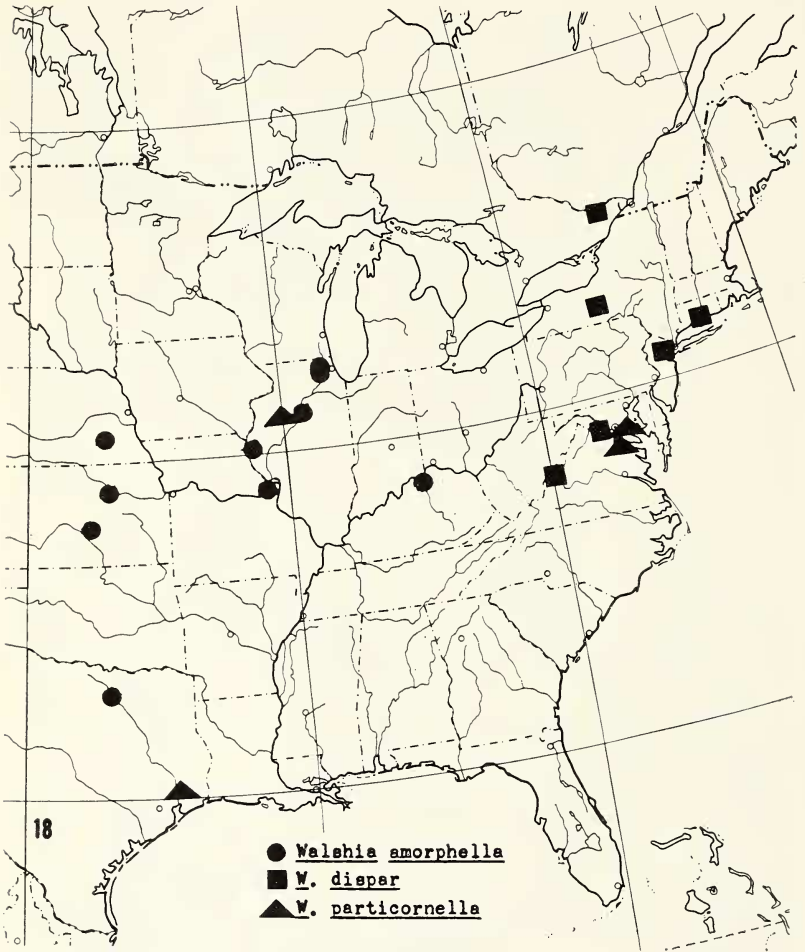
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PLATE V



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PLATE VI



DISTRIBUTION RECORDS